

Remarks

Claims 1 and 3-21 remain in this application. Claim 2 is hereby canceled without prejudice. Claims 1, 3-8, 9, and 18 are hereby amended. Claim 21 is newly added. No new matter is being added.

Claim Rejections--Scrandis et al

Claims 9, 15 and 18-20 were rejected under 35 U.S.C. § 102(e) as being anticipated by Scrandis et al (USP 6,694,455). Applicants respectfully traverse this rejection with respect to the claims as amended.

Amended claim 9 recites as follows.

9. A method of status reporting for a computer system configured as a node of a cluster of interconnected computer systems that is used as a single computing unit, the method comprising applying a set of rules to determine current multi-state status of the node, wherein states of the multi-state status includes a good state, a bad state, and at least one degraded state.

(Emphasis added.)

As shown above, amended claim 9 now clarifies that the method is performed by “a node of a cluster of interconnected computer systems that is used as a single computing unit.” Such a cluster is described in the application, for example, as follows. “A cluster is a parallel or distributed system that comprises a collection of interconnected computer systems or servers that is used as a single, unified computing unit. Members of a cluster are referred to as nodes or systems. The cluster service is the collection of software on each node that manages cluster-related activity....” (Page 1, lines 17-21.)

Applicants respectfully submit that Scrandis et al does not pertain to such “a cluster of interconnected computer systems that is used as a single computing unit.” Instead, Scrandis et al relates to a **communications network** between **separate and remote units**. Such a communications network does not read on the claim

language that requires “**a cluster** of interconnected computer systems that is used as a **single computing unit**.”

In a conventional cluster, an up/down “heartbeat” mechanism is used to report a state of a node. Instead, the claimed invention uses a multi-state status which includes **a good state, a bad state, and at least one degraded state**. As described in the present application, such a multi-state status for the state of a node in a **cluster** system “advantageously allows for significant improvement in the efficiency (uptime) of an HA cluster.” (Page 5, line 33 to page 6, line 1.)

For at least the above-discussed reasons, applicant respectfully submits that claim 9 is now patentably distinguished over Scrandis et al.

Claim 15 depends from amended claim 9. As such, claim 15 is now patentable over Scrandis et al for at least the same reasons as discussed above in relation to claim 9.

Similarly to claim 9, amended claim 18 now recites “An apparatus for reporting status from **a node of a high-availability computing cluster that is used as a single computing unit**” In contrast, as discussed above in relation to claim 9, Scrandis et al relates to a **communications network between separate and remote units**. In addition, claim 18 also recites “signaling hardware configured to output the multi-state status of the node, wherein states of the multi-state status includes a good state, a bad state, and at least one degraded state.” This requirement distinguishes claim 18 over the conventional technique in a computing cluster. Hence, for at least these reasons, applicant respectfully submits that claim 18 is now also patentably distinguished over Scrandis et al.

Claims 19-20 depend from claim 18. As such, claims 19-20 are now patentable over Scrandis et al for at least the same reasons as discussed above in relation to claim 18.

Claim Rejections--Scrandis et al in view of Jackson et al

Claims 1-7, 10-14, and 16 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Scrandis et al (USP 6,694,455) in view of Jackson et al (USP

6,536,000). Applicants respectfully traverse this rejection with respect to the claims as amended.

Amended claim 1 recites as follows.

1. A computer system configured as a node of a high-availability cluster of interconnected computer systems, the computer system comprising:
 - a memory system including an operating system which provides a **clustering service for managing the cluster of interconnected computer systems as a single system**;
 - a first register configured to store multi-state status data of the node;
 - a second register configured to store multi-state status data from another node of the high-availability cluster of interconnected computer systems;
 - an input port configured to receive signals representing the multi-state status data of the other node; and
 - an output port configured to send signals representing the multi-state status data of the node,wherein the multi-state status data includes **at least three states**.

(Emphasis added.)

As shown above, amended claim 1 now requires “**a clustering service for managing the cluster of interconnected computer systems as a single system**.” Such a clustering service is described in the application, for example, as follows. “A cluster is a parallel or distributed system that comprises a collection of interconnected computer systems or servers that is used as a single, unified computing unit. Members of a cluster are referred to as nodes or systems. The cluster service is the collection of software on each node that manages cluster-related activity....” (Page 1, lines 17-21.)

Applicants respectfully submit that Scrandis et al does not pertain to such a computing cluster. Instead, Scrandis et al relates to a **communications network between separate and remote units**. Such a communications network does not read on the claim language that requires “**a clustering service for managing the cluster of interconnected computer systems as a single system**.”

While Jackson et al relates to a multiprocessing computer system (i.e. a computing cluster), Jackson et al does not appear to teach the claimed use of a multi-state status which includes **at least three states**. As described in the present

application, such a multi-state status for the state of a node in a **cluster** system “advantageously allows for significant improvement in the efficiency (uptime) of an HA cluster.” (Page 5, line 33 to page 6, line 1.)

Moreover, there is no motivation to combine the teachings of Scrandis et al and Jackson et al (without hindsight) because they come from **different technical fields**. While Jackson et al relates to computing clusters, Scrandis et al pertains to communication networks.

For at least the above-discussed reasons, applicant respectfully submits that claim 1 is now patentably distinguished over Scrandis et al. in view of Jackson et al.

Claims 3-7 depend from amended claim 1. As such, claims 3-7 are now patentable over Scrandis et al. in view of Jackson et al for at least the same reasons as discussed above in relation to claim 1.

Similarly to claims 1 and 3-7, claims 10-14 and 16 (which depend from claim 9) pertain to the use of multiple-state status in computing clusters. As discussed above, Scrandis et al pertains to network communications, not computing clusters. While Jackson et al relates to computing clusters, Jackson et al does not appear to teach the use of multiple-state status in those clusters. Moreover, because Scrandis et al and Jackson et al come from **different technical fields**, there appears to be no motivation to combine them (without hindsight). Hence, for at least the above-discussed reasons, applicants respectfully submit that claims 10-14 and 16 are now patentably distinguished over Scrandis et al. in view of Jackson et al.

Claim Rejections--Scrandis et al in view of Jackson et al in view of Liang

Claim 8 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Scrandis et al (USP 6,694,455) in view of Jackson et al (USP 6,536,000) in view of Liang (USP 6,738,811). Applicants respectfully traverse this rejection with respect to the claims as amended.

Claim 8 depends from claim 1. Hence, for at least the reasons discussed above in relation to claim 1, claim 8 is patentably distinguished over Scrandis et al in view of Jackson et al. Regarding Liang, like Scrandis, Liang does not pertain to **computing clusters**. Instead, Liang pertains to a **monitoring servers across data**

networks. In other words, the servers of Liang are not coordinated with each other via “**a clustering service** for managing the cluster of interconnected computer systems **as a single system**” as required by claim 1.

Moreover, because Liang and Jackson et al come from **different technical fields**, there appears to be no motivation to combine them (without hindsight). Hence, for at least the above-discussed reasons, applicants respectfully submit that claim 8 is now patentably distinguished over Scrandis et al. in view of Jackson et al in view of Liang.

Claim Rejections--Scrandis et al in view of Liang

Claim 17 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Scrandis et al (USP 6,694,455) in view of Liang (USP 6,738,811). Applicants respectfully traverse this rejection with respect to the claims as amended.

Claim 17 depends from claim 9. Hence, for at least the reasons discussed above in relation to claim 9, claim 17 is patentably distinguished over Scrandis et al. Regarding Liang, like Scrandis, Liang does not pertain to **computing clusters**. Instead, Liang pertains to a **monitoring servers across data networks**. In other words, the servers of Liang are not coordinated with each other via “**a clustering service** for managing the cluster of interconnected computer systems **as a single system**” as required by claim 1.

Hence, for at least the above-discussed reasons, applicants respectfully submit that claim 17 is now patentably distinguished over Scrandis et al. in view of Liang.

New claim 21 depends from claim 9. For at least the reasons discussed above in relation to claim 9, claim 21 is also patentably distinguished over the applied references. New claim 21 further recites limitations to good, bad, and degraded states as described in accordance with a specific embodiment of the invention.

Conclusion

For the above-discussed reasons, applicants respectfully submit that claims 1 and 3-21 are patentably distinguished over the applied references. Favorable action is respectfully requested.

The Examiner is also invited to call the below-referenced attorney to discuss this case.

Respectfully Submitted,

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